A Status Report to Congress on

The Renovation of the Pentagon

Prepared by
The Office of the Secretary of Defense

March 1, 2000

Process Improvements

Aerial view of the Pentagon looking over Wedges 2 (foreground) 3, 4. Wedges 2 through 5 are currently being planned as a single acquisition, with phased construction. The objective is to realize cost savings with one prime contractor through the benefits of a true partnering environment.

III. PROCESS IMPROVEMENTS

Security

Acquisition

Information Management and Telecommunications

Construction

Commissioning

Tenant Moves

Systems Furniture Implementation

Program Management

The Pentagon Renovation Program Manager points out to the Secretary of the Army, Louis Caldera (front), some of the unique structural features of the Pentagon's building frame during a tour of Wedge 1.

SECURITY

Perimeter access at Utility Plant with crash-rated barrier protection.

Card reader stanchion with CCTV, intercom, and multi-badge capabilities.

The Pentagon Renovation Program security upgrades include maintaining the existing security afforded to the entire building, while upgrading perimeter access control, building access control, and expanding the closed circuit television system (CCTV) to include areas under construction. The security upgrade measures are based on an overall master security program upgrade process enhanced by additional protection requirements based on terrorist threats and force protection issues.

PERIMETER ACCESS CONTROL

A system of crash gates and bollards were upgraded in 1999 to control vehicle access to Pentagon entrances. The vehicle access control is now activated by using the building pass, which is issued to approved personnel.

Crash-rated pop-up barriers.

BUILDING ACCESS CONTROL

All personnel entrances have been upgraded to a turnstile access control system that utilizes the building pass (badge) of individuals. This provides the Pentagon Defense Protective Service with the capability of positive access control and visitor control. Reports can be generated to reflect the user population at any given time.

Automated access control has been installed at all Mall, River, and Metro entrances.

CLOSED CIRCUIT TELEVISION SYSTEM (CCTV)

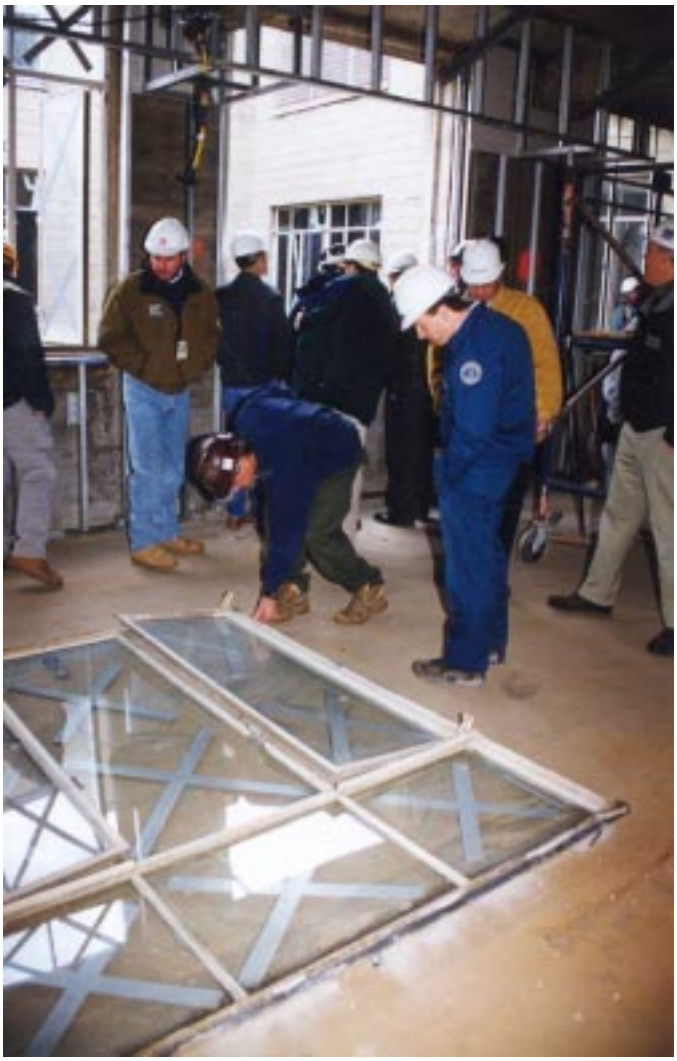
The Pentagon's CCTV security systems were substantially improved during 1999. A major emphasis was placed on improving the lighting and CCTV coverage of the parking lots. Additionally, motion-activated CCTV cameras were placed to monitor the Highway110 traffic.

A state-of-the-art security station with CCTV, Video Image Recognition, Communication, and Bullet Resistance Protection capabilities.

Aerial view of the Pentagon. Wedges 1-5 encompass 5,000,000 square feet of building space above ground.

WEDGES 1-5

Wedge 1 and Wedges 2-5 are receiving the majority of the Pentagon's security upgrade attention. The first, core and shell security, deals primarily with the building's standard security requirements, i.e., CCTV in corridors, securing the electrical and mechanical rooms, and the building perimeter doors (entrances and emergency exits). All the output from the devices performing these security functions are sent to the Defense Protective Service Records Control Center where these devices are monitored 24 hours a day.



Engineers examine features of the first of 7,748 windows that will be removed during the course of renovation.

WINDOWS

There are 7,748 windows in the Pentagon. They consist of steel casements largely embedded in the perimeter walls of the concentric inner courts, and steel double-hung units in the outermost perimeter and in the Center Courtyard walls. The double-hung units in the central pavilions of the Mall and River Entrances are steel. The casements are rusted and corroded at the joints, racked out of shape, and cannot be properly closed.

The new windows on the A and E rings will be blast-resistant and permanently closed. This will not only increase the energy efficiency of the building, but will also serve to protect the tenants against an external attack.

Lead paint around Pentagon window frames requires workers to wear protective clothing during the window removal process.

TENANT SECURITY

Tenant security requirements are determined by tenant needs and must meet National Security Policy. The requirements can range from a lock on a facility entrance door to an area that requires combination door locks, a secure area access control system, and an Intrusion Detection System . The tenant has the option of monitoring these systems or having the monitoring done by the Defense Protective Service.

Electronic turnstiles ensure the validity of DoD passes.

FY1999 ushered in additional Pentagon security requirements based on numerous international and domestic terrorist attacks. Two major projects were started as counter-terrorism measures to enhance the security of the Pentagon. These are the Remote Delivery Facility (RDF) and the Metro Entrance Facility (MEF).

Heavily reinforced concrete walls continue to rise on the site of the Pentagon's new Remote Delivery Facility.

This portion of the Remote Delivery Facility is marked by tightly meshed rebar.

REMOTE DELIVERY FACILITY (RDF)

The RDF will be an external facility whose function will be to security-screen all material being delivered to the Pentagon. This will involve the use of large x-ray units, explosive material detection equipment (including specially-trained dogs), under-vehicle closed circuit television systems, and incoming material physical inspections performed by highly trained Defense Protective Service personnel. The magnitude of this effort can be expressed in the number of deliveries, which now are being screened at a remote site. The daily average is over 220 deliveries for a normal work day.

Formwork has been removed from the new concrete truck bays of the Remote Delivery Facility.

METRO ENTRANCE FACILITY (MEF)

The security assessment recommended a separate visitor and receiving center for the Pentagon. The Metro Entrance Facility (MEF) will allow for a more secure processing of visitors into the Pentagon. The concept is to isolate potentially dangerous people from gaining access into the building. The primary objective of the MEF is to improve the level of safety and security of the Pentagon building, while continuing to provide convenient access to the Metro and the various means of above ground transportation along the southeast side of the building. The MEF project includes:

The Metro Station bus loop at the Pentagon.

- The relocation of the existing bus facility away from the Pentagon building.
- The construction of a new secured Pentagon building entrance structure, which would include the building pass office and a visitor's center.
- An alternative means of access to the existing Pentagon Metro Station.
- Improved facilities for private vehicle and taxi service.

Aerial view looking southwest toward the Pentagon Metro Station. New security initiatives require that the bus loop to be moved farther away from the building.

ACQUISITION

Business as usual is not an option. The size and complexity of the task at hand, renovating an occupied building exceeding six million square feet without disrupting the critical work of the Department of Defense, demands an acquisition approach that is far more flexible, efficient, and responsive than the public sector design and construction model in use for much of the last century. The business and contracting practices of the Renovation Program bear little resemblance to those of the not-too-distant past and must continue to evolve to meet the constantly changing challenges of renovating the Pentagon.

Key stakeholders are involved in the renovation process at the early planning stages.

The traditional public construction paradigm - design, bid, build - produces designs that are complete far in advance of construction and even farther in advance of actual occupancy. Changes in project requirements can then only be accommodated by costly and inefficient change orders. The award is made to the low bidder under intense competitive pressure and contractors frequently bid at or below the cost of performance. After award, contractors then seek to maximize the number of change orders in a sole source negotiation environment that is historically unfavorable to the Government. Significant cost overruns, delays, adversarial jobsite relationships and litigation frequently result. The design-bid-build approach is particularly unsuited to renovation where new design elements must be incorporated into an existing structure and the ability to respond swiftly to unforeseen site conditions revealed during construction without excessive change order activity is of paramount importance.

The Renovation Program has abandoned the traditional government paradigm. Contracts are no longer awarded to the low bidder, but to the contractor who can provide the best value, with heavy emphasis placed on the contractor's past performance on similar work. In addition, most renovation contracts now contain cost incentive provisions that permit the contractor to share in both underruns and overruns (the Government's liability on overruns is capped). In addition, renovation contracts now contain subjective award fee provisions that provide the contractor with incentive to earn a profit-based reward of up to 10% of the bid price for superior construction quality, schedule performance, etc. Award fee evaluations are conducted quarterly and provide contractors with the opportunity to realize a significant profit or an immediate and unambiguous message (i.e. little or no fee) when performance is poor. The award fee is a powerful tool. It discourages frivolous change order requests and permits the Gov-

ernment to motivate the contractor to excellence on particular elements of contract performance that are critical to the project success.

In addition, the Renovation Program has changed its design and specification practices. In the traditional approach, the Government provides hundreds of pages of drawings and specifications that describe, in detail, not only where every switch plate, doorknob and outlet is to be placed but *how* it is to be placed. This prescriptive or "cookbook" specification method increases design costs, and creates a contractual straitjacket that denies industry the opportunity to take advantage of economies that present themselves during the construction phase. Using performance requirements that describe "what" performance characteristics are required, not "how" these characteristics are to be achieved, the Renovation Program is increasingly able to take advantage of efficiencies long utilized in commercial construction, but slow to take hold in the public sector. In addition, performance-based requirements are far better suited to the uncertainties inherent in renovating a 58-year-old building in an advanced state of deterioration.

In January 2000, the Pentagon Renovation Deputy Program Manager (right) signed a memorandum of agreement with officials from the Washington, D.C. Board of Trade to encourage participation of small, disadvantaged, and "Hub-Zone" firms in the Renovation Program.

The Remote Delivery Facility is an outstanding example of how innovative acquisition methods that break down the barriers between design and construction can reduce costs and speed project delivery. In the traditional paradigm, the design is performed by an architect-engineer firm and implemented, after bidding, by a construction firm. Construction cannot begin until the design is complete in every detail and the construction contractor plays no role in design, allowing valuable constructibility expertise to go unutilized. Further, the Government bears responsibility for errors and omissions in the design documents. The RDF, in sharp contrast, was procured using a design-build methodology in which a single entity, a construction firm in partnership with an architect-engineer firm, is responsible for both design and construction.

This approach, increasingly popular in the private sector, shortens delivery times by permitting construction to begin before the design is complete because it is not necessary, for example, to know the color of the carpet in order to pour the foundation. A corollary advantage of this single point of responsibility is that the Government is no longer the middleman between the designer and the constructor and bears no responsibility for errors and omissions in design. The RDF, on an extremely aggressive, 24-month, schedule because of building security concerns, has benefitted greatly from this approach and is proceeding on cost and on schedule. The extremely high award fee scores earned by the contractor/joint venture bear witness to a change in an acquisition culture where contractors are motivated to seek, and achieve, excellence in public sector design and construction.

In May 1999, groundbreaking began on the site of the new Remote Delivery Facility. The "incentivized" design-build contract was the first of its kind to be used during the renovation program.

The centerpiece of the ongoing and future acquisition reform efforts is the Wedges 2 through 5 procurement. Wedges 2 through 5 will be procured as a single design/build contract (i.e. Wedge 2 will be the base contract and Wedges 3 through 5 will be contract options) and will contain the incentive and award fee provisions described above. The contractor, in addition to providing design and construction services, will be responsible for orchestrating tenant moves, and installing temporary utilities and sound dampening barrier walls to isolate occupied areas from noise, dust, etc. This single contractor approach ensures reduced design costs, minimization of the learning curve new contractors experience when first working in the unique environment of the Pentagon, construction economies of scale and the inherent efficiency in having a single contractor responsible for the renovation of the entire building.

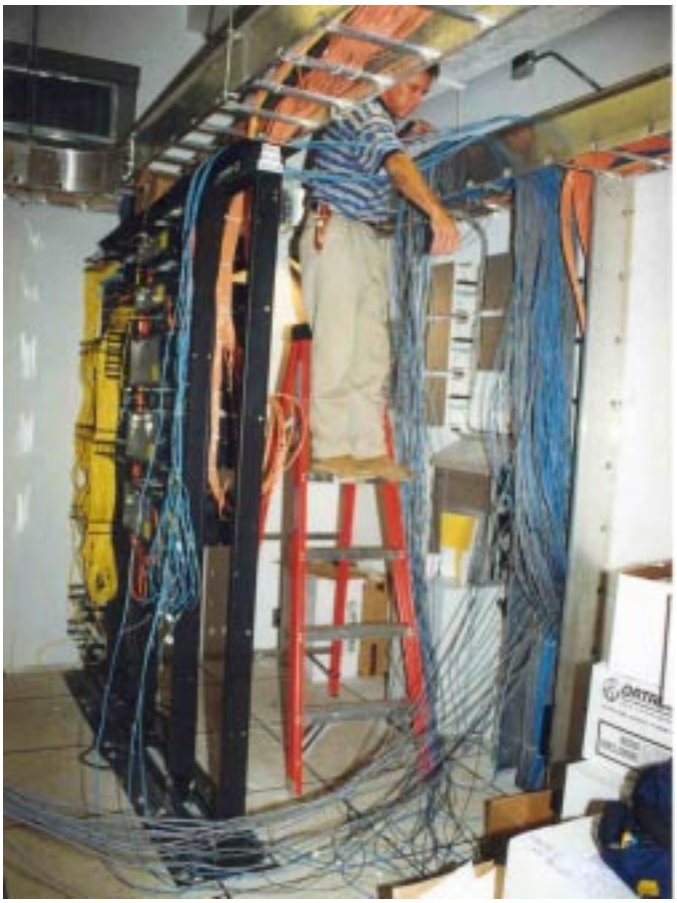
A corollary advantage of this approach is a design-to-budget methodology in which the potential contractors will propose design and construction plans to accommodate known budget limitations and minimum requirements. The Government will provide a prioritized list of items that specify a range of preferred requirements. Each of the contractors will identify, in its proposal, which of the additional items or features it will provide. This will permit the Government to identify, on a finite basis, which design/build contractor offers the best value for the available funds.

Because the impact of the innovative acquisition approaches described above has yet to be fully felt, it is difficult to define the cost and schedule benefits with precision. However, new contracts are substantially outperforming old contracts in quality, value and timeliness and current indications suggest that trends should continue to be favorable. There is synergy between the various acquisition innovations the Renovation Program has implemented and the whole is greater than the sum of its parts. In particular, the combination of design/build requirements, shared savings implicit in the incentive fee provisions, and judicious use of the award fee offers the promise of a more efficient, less adversarial, and more flexible business approach to renovating an enduring symbol of American public life.

Nevertheless, although substantial progress has been made, much work remains to be done. More than four million square feet remain to be renovated and many challenges lay ahead. The Program's ability to sustain its recent successes will depend, in large measure, on our ability to improve further on the innovations implemented to date.

INFORMATION MANAGEMENT AND TELECOMMUNICATIONS (IM&T)

A telecommunications technician installs fiber optic lines inside new spine-wall furniture.



An IT specialist installs data wiring harnesses inside a new telecommunications closet in the Pentagon's basement.

Separate but related to the Pentagon Renovation Program is a necessary modernization of the building's information management and telecommunications infrastructure and systems. The basic information system infrastructure in the Pentagon was installed long before the advent of personal computers, facsimile machines, video teleconferencing, and digital telephone service, and has evolved without a design plan. As requirements emerged, facilities and systems were added with little or no regard to existing capabilities or long term requirements. The individual military departments and agencies engineered and installed equipment and cables to meet their specific requirements.

The objective of the IM&T effort is to provide cost-effective services and capabilities that will best serve the needs of the pentagon tenants and DoD senior leadership by leveraging technology advancements and designing and developing integrated systems. The Program Manager for IM&T derives acquisition authority from the Deputy for Systems Acquisition, Communications and Electronics Command. It operates under a Project Manager Charter issued by the Army Material Command and authorized by the Army Acquisition Executive. The office of the Director of Information Systems, Command, Control, Communications, Computers, (DISC4) is the Milestone Decision Authority. The IM&T modernization will be accomplished in conjunction with the building renovations. The first phase began with replacement of the heating and refrigeration plant in December 1992. This was followed by the current renovation activities in the basement and mezzanine areas, begun in August 1994. The third phase addresses renovation of the above-ground portion of the Pentagon, including renovation of the Above-ground Telecommunications Backbone infrastructure.

In 1943, there was one telephone for every three employees. Over the last 57 years, new IM&T capabilities have emerged and the systems have been laid on top of the old. Over time, this merging of IM&T capabilities has become unmanagable and not easily upgraded. Today, the 25,000 workers in the Pentagon are largely 'Information Age' workers with *at least* one telephone and desktop computer system per person. They require immediate access to local as well as worldwide networks and need the tools to rapidly collect data, analyze it, and present it to decision makers in a timely manner. This requirement defines the objectives of the IM&T Pentagon Renovation project:

A portion of the Pentagon Consolidated Technical Control Facility (PCTCF). Above: The PCTCF during floor installation.

IT specialists review designs during wiring installation.

A technician pulls new fiber optic lines from large spools.

An IT specialist connect data lines to a new spine-wall panel.

- Provide modern telecommunications and information management services throughout the Pentagon with access to global networks. Backbone communications will support voice, data, and video at varying security levels.
- Define, procure, integrate, and test hardware and software items required to meet functional requirements of the Pentagon's consolidated Network Systems Management Center.
- Modernize the telecommunications infrastructure and consolidate the functions and responsibilities of the seven technical control facilities in the Pentagon Consolidated Technical Control Facility.
- Relocate the Defense Information Systems Agency, Joint Staff Support Center, Command and Control Automated Data Processing (C2ADP) Centers from existing facilities into one new facility located in renovated space.
- Paralleling the C2ADP efforts, the Business ADP Center will provide a modernized data processing facility for Army and Air Force systems. Business ADP #1 will be used primarily to house mainframe processors, large servers, and their peripheral equipment, including storage devices and network processors. Systems were operating in multiple centers within the Pentagon.
- Four distributed server facilities will be built in each wedge. These server facilities will allow for a total of 18 service and agency servers to be consolidated into common facilities without the need to build hundreds of special purpose facilities throughout the building.

A computer specialists tests equipment in the new Network Systems Management Center.

- Provide the renovated Pentagon with improved voice communications currently provided by 22 Command and Control, Tactical, and Administrative telephone switches located in 12 different facilities. Refurbish, upgrade and install the primary and secondary red and black Command and Control switches. Install the Main Distribution Frame in the General Purpose Switch Room and reduce the number of switches in the Pentagon from 22 to eight.

- Replace the 166 radio systems distributed throughout the building with 1 Consolidated Radio Room (CRR) in each wedge.

The renovated Pentagon will include a 30,000-line telephone switch providing voice services through optical fiber-based distributed telephony; common user systems such as e-mail and messaging; collocated automatic data-processing facilities; an information infrastructure of fiber optic and copper cable; a common user data, voice, video backbone (4 levels of classification); and a single Network Systems Management Center. The backbone provides interoperability between legacy and renovation commercial networks; is secure, scaleable, upgradeable, and flexible; in no way degrades current user network capabilities; and is standards-based. IM&T recently completed the move of over 7,000 Pentagon users during a six-month period with no degradation of service. IM&T will enable the Pentagon's success in information warfare.

CONSTRUCTION

The Network Systems Management Center was successfully turned over early in 1999.

In order to keep a project running smoothly, submittals, requests for information, and contract modifications all need to be processed in a timely manner. This past year the Renovation Program started using a program that integrates with the renovation schedule, combines all paperwork into a single database and allows direct e-mail or written communication with the contractors. Over 90% of paperwork is now completed within established time targets. Daily reports also allow the Program to identify upcoming deadlines and apply additional resources as required.

TURNOVER AND COMMISSIONING OF RENOVATED SPACE

A physical therapy room in the new TriCare Clinic. The facility was turned over to the Pentagon medical community in January 2000.

The Construction IPT has worked very closely with the Pentagon Building Management Office, commissioning specialists, and the Program's customers to facilitate the turnover process. The Renovation Program is now performing joint inspections in order to reach a complete understanding of the work being accomplished. These inspections allow the Program to take advantage of the broad range of specialized experience of the group members to be sure equipment and systems work as designed and to minimize warranty calls later. Punchlists and correction schedules are prepared and every attempt is made to complete the work before move-in. Tenant feedback indicates the Renovation Program has improved greatly in this area over the last year, but it will continue to refine this process and expects to show further improvement in the years to come.

REDUCING THE NEGATIVE IMPACT ON BUILDING TENANTS

Reducing the negative impacts to building tenants is one of the main challenges of the Renovation Program's construction efforts. Construction is often loud, wet, dusty and creates hazardous environments requiring protective clothing and equipment. Building tenants occupy areas adjacent to the barrier walls separating them from hazardous site conditions. Deliveries of construction material and equipment have been disrupting traffic flow on the exterior of the building. It is impossible to eliminate all of the impacts of the surrounding work, but the Program is minimizing the impacts and maintaining a safe environment.

An external hoist facilitates the safe removal of hazardous materials from Wedge 1 by eliminating the need to transport it through the Pentagon.

Excessive noise accounts for the majority of complaints received by the Renovation Program. To eliminate this problem, the loudest work is done at night whenever possible. A hotline has been set up so tenants can call the Renovation Office when disruptions do occur. Every attempt is made to correct the situation within 30 minutes. A particular challenge for the Renovation Program is the fact that the concrete building structure that transmits and amplifies noises long distances. Tracking down an intermittent noise source is sometimes difficult but noise issues are always resolved.

Renovation team members in front of a tunnel opening on the site of the new Remote Delivery Facility. Microtunneling technology was used instead of more time-consuming traditional tunneling excavation methods.

COMMISSIONING

Commissioning is the process of achieving, verifying and documenting the performance of building systems in accordance with the design intent and the owner's functional and operational needs. Commissioning starts in the design phase and extends through the construction process and into the warranty period. In brief, the commissioning process entails developing clear and complete design and operational intent documentation, verifying and documenting proper equipment and system performance, ensuring that appropriate operations and maintenance documentation is left with the building operating staff and ensuring that the building operators are sufficiently trained. Building commissioning is a team effort and requires cooperation by all parties to succeed.

The ribbon cutting ceremony for the Command and Control Automated Data Processing area.

Commissioning goes beyond testing, adjusting, and balancing and traditional inspection services. Commissioning involves functional performance testing to determine how well building systems, such as fire safety, mechanical and electrical systems, work together. Commissioning seeks to determine whether equipment meets a facility's operational goals or whether it needs to be adjusted to improve efficiency and overall performance.

These activities are not, as many owners and managers believe, part of the typical design and construction process or part of standard operations and maintenance procedures.

The ribbon cutting ceremony in the Air Force Council Room marked the turnover of both the Council Room and the Air Force Operations Group area.

COMMISSIONING BENEFITS

The benefits most often cited for conducting commissioning are:

- Improved system performance
- Improved operation and maintenance
- Improved indoor air quality
- Improved energy efficiency

REQUIREMENT

Executive Order 12902, March 8, 1994, Energy Efficiency and Water Conservation at Federal Facilities, Section 306, requires that a facility commissioning program be established for all new or renovated buildings, but refers specifically to ensuring that performance standards , as set forth in 10 CFR 435, are met.

IMPLEMENTATION

The integration of the Commissioning process into Pentagon Renovation Projects was accomplished in phases. The three major projects underway or planning were the Tricare Clinic, Wedge One, and the Remote Delivery Facility. The TRICARE Clinic project was near the end of core and shell construction. Commissioning activities consisted of reviews of required submittals including operations and maintenance manuals, training plans, equipment startup checklists, functional performance tests, and 'as built' drawings. In many cases, commissioning included writing test procedures where there was no requirement for these under the pre-existing construction contract. The Wedge One project had completed the design phase and was just beginning the core and shell construction phase when commissioning activities commenced. Commissioning here included building system design reviews, and equipment and product data submittal reviews.

The Remote Delivery Facility project is the first project for which the commissioning process was fully integrated from the start. Commissioning activities here began with technical reviews of the Conceptual Design, Basis of Design, and the Design Intent documents, and continued throughout all design phases and into the construction phase.

TENANT MOVES

Three office buildings within a three-mile radius of the Pentagon were leased for swing space. A massive renovation effort was needed to ensure that the 45 floors of office space acquired meet the unique requirements of Pentagon personnel.

Due to the logistical constraints presented by the Pentagon building, its security requirements, and the necessity to minimize downtime and disruption to employees' daily activities, the Renovation Program implemented a unique and innovative process of relocate tenants within the Pentagon in order to meet the renovation schedule. This approach removes much of the guesswork associated with relocating and turning over space and, by coordinating with the tenant, minimizes disruption to tenant operations. The Program established a Relocation Planning Team (RPT). The primary responsibility of the RPT is to prepare the tenants for the move. This includes:

- Providing agency-specific relocation checklists, which give the tenants an "itemized" list of tasks to be accomplished prior to and after the move; Relocation Handbooks, which instruct the tenant on packing and labeling procedures, move timeframes, etc.; "Move Packets", which have pre-printed labels and check-out sheets; post move questionnaires, which give the tenants an opportunity to provide the Program feedback on the relocation process, new space, furniture, systems, etc. These documents and forms have been made accessible to all Pentagon employees electronically, thus saving the government printing costs.

- Coordinating the logistical and security requirements between the movers and the affected agencies, such as the Defense Protective Service, Information Management & Telecommunications, the Dockmaster, and the Pentagon Building Management Office.

The RPT has saved the government money on moves when compared to industry standards through up-front planning with the tenant, its understanding of the customers' needs, their working environment and the dynamics of the Pentagon building.

The decision to procure moving services through a multiple award contract has allowed flexibility in move assignments and removed constraints on resources. Some notable accomplishments are:

- Negotiating the cost for each move activity and overseeing the move activity to ensure the Government's instructions are adhered to.
- Tracking, coordinating and overseeing the delivery and installation of furniture, furnishings, and equipment for tenants being relocated to renovated space as well as coordinating and overseeing the removal of surplus items.
- Coordinating the cleaning of the new space immediately after the move and prior to occupancy, as well as the removal of trash at the old space once the move has been completed.
- The relocation of over 7,000 personnel from various wedges to external swing space locations, as well as internal moves within the Pentagon
- The consolidating of the Army Library while maintaining its operability and minimizing disruption to operations in support of the renovation of Wedge 1;
- The relocation of command and control operations over nine phases within the basement while maintaining operations and minimizing disruption;
- An emergency cleaning of the TRICARE clinic in order to maintain the equipment delivery schedule.

An employee with the Policy Automation Directorate was one of the first of 1,200 employees to be relocated to permanent renovated space in the the Pentagon's basement.

The process developed by the Relocation and Planning Team has resulted in saving the government money by establishing moving services contracts that allow the Program to handle activities that may not usually fall under a mover's purview. For example, the movers can provide cleaning services, subcontracting services for specialty equipment with warranties that require a certain vendor to perform the services, personal computer decertification and recertification services, etc. This flexibility allows the Program to handle a variety of tenant requirements.

Understanding the difficulty in adhering to schedules of the magnitude the Pentagon renovation requires, the Program procured a 60,000-square-foot warehouse to temporarily store new construction materials, furniture, furnishings, and IT equipment in support of the renovation. The Program also acquired a 10,000-square-foot warehouse to store artwork, artifacts, and historical displays removed from public areas of the Pentagon during renovation. Upon completion of a renovated Wedge, the inventoried and catalogued artifacts and displays are placed back into the building.
Things to note about the Program:

An employee moves into renovated space in the Pentagon's basement.

- Currently, warehousing and monitoring the delivery and installation of the Clinic equipment;

- Beginning a recycling program for cardboard trash at the warehouse. To date, the Renovation Program has recycled over 30,000 lbs. of cardboard.

To many, the successful relocation of the tenant to temporary or permanent space represents the end of the process. For the Program, however, the activities following the relocation are critical to the overall success of the renovation. The space vacancy and turnover process has been the "long pole in the tent" for the renovation schedule. The coordination between the Renovation Program and all stakeholders to de-certify a space for demolition has been honed into a finely tuned process. The Program is responsible for removing the surplus furniture, furnishings, and equipment from vacated tenant space. To do this, the Program must inventory, surplus, and present to potential customers any furniture, furnishings, and equipment not being relocated to renovated space. Based on the condition of the surplus items, PenRen has to determine if the items will be presented for re-use within the government, donated to charitable organizations or deemed excess property and officially disposed of. The Renovation Program must then coordinate the various other "partners" in order to allow the shutting off of utilities, removal of secure lines, telephone lines and equipment, etc. The Program then coordinates a trash removal activity with its cleaning contractor in order to officially turn over a space to the demolition and abatement contractor to begin renovating. This myriad of coordination activities has been reduced to one month after tenant move out.

ACTIVITY STATUS - PROJECTS IN DESIGN

The Renovation Program has a "Back-to-Basics" approach to upcoming activities. Based on the "lessons learned" from the Wedge 1 move-outs and subsequent moves into swing and/or permanent space, the Program will perform the following activities by simplifying our move process, and begin to work closely with the design/build contractor in support of the following activities:

- **FY 2001** – The Renovation Program will handle the furniture tracking, delivery, and installation oversight, as well as the relocation planning, moves, and surplus removal services as it relates to Wedge1and Internal/External Swing Spaces. The Renovation will also procure the services of a cleaning contractor to provide pre-move cleaning services for renovated Pentagon space. The Renovation Program will also continue to use its three moving services contractors in support of the moves.

- **Outyears** - The possibility of the Renovation Program transitioning some of the Interior Standards and Relocation Activities to the design/build contractor and other government agencies is being considered upon the completion of move-ins to Wedge 1. These will include the move services contract, which will be maintained by the design/build contractor, the surplus removal services, and the Artwork and Artifact services oversight, which will be turned over to the Office of the Secretary of Defense (OSD). However, during this transition period and immediately following, a number of critical relocations will occur which will require careful coordination between the Renovation and the parties listed above. Some of these moves include, but are not limited to:

  - NMCC
  - Secretary of Defense
  - Deputy Secretary of Defense
  - Chairman, Joint Chiefs of Staff
  - Secretary of the Army
  - Secretary of the Navy
  - Secretary of the Air Force
  - Commandant of the Marines

This transition must seem "invisible" to the affected parties listed above and the high level of service that customers of the Renovation Program have come to expect must be maintained.

SYSTEMS FURNITURE IMPLEMENTATION

A technician connects communication lines below a raised floor in the Pentagon's basement.

WORKSTATIONS

In partnership with GSA, a systems workstation schedule contract was awarded in January of 1999 to five workstation manufacturers.

QUANTITY DISCOUNTS

Because of the large number of workstations to be procured during the renovation, discounts were negotiated with each of the five furniture manufacturers to obtain cumulative quantity discount thresholds exceeding the maximum discount available from the GSA schedule.

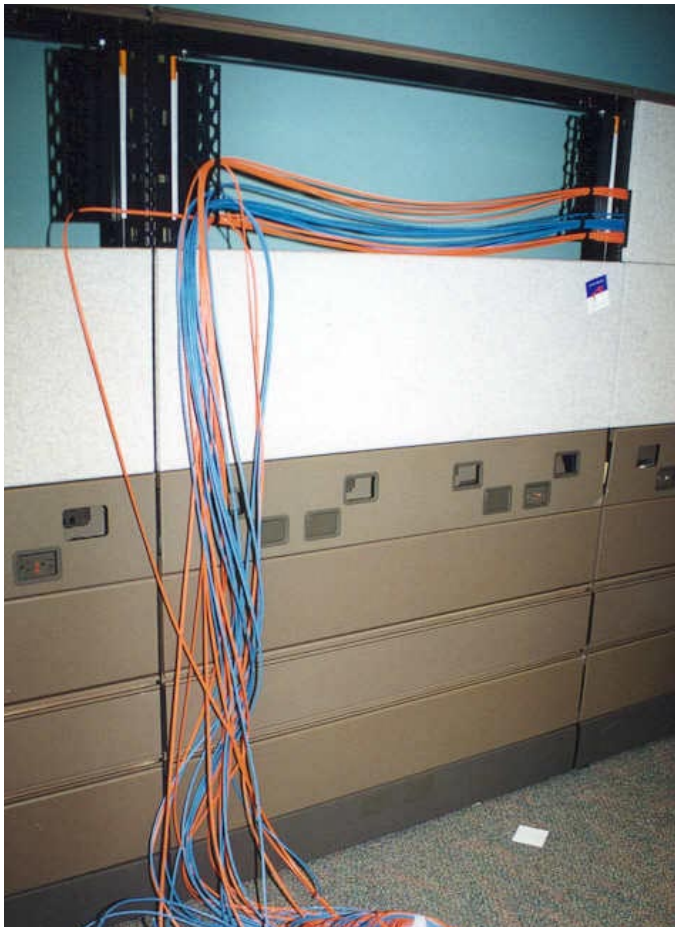
New spine-wall technology allows a technician easy access to communications wiring.

AWARD FEE PROVISION

An award fee provision was included to help ensure that furniture design and installation services are given the emphasis required to successfully integrate the furniture installation schedule into the construction schedule.

SPINE-WALL TECHNOLOGY

The advantages of using a spine-wall workstation configuration are: (1) Telecommunications are run within the furniture in easily accessible raceways; (2) Power and telecommunications are accessed at a "belt-line" level rather than at the floor, making desk connections much quicker and simpler; and (3) "Wing" wall panels connect anywhere along the length of the spine wall, not only at the panel intersections as in older style system furniture. This allows much greater flexibility in both initial furniture layout and future reconfigurations.



A spine-wall with an open panel displaying the telecommunications raceway.

PROGRAM MANAGEMENT

Renovation team members brief Dr. John Hamre, Deputy Secretary of Defense, (left) on design details for building interiors. The Pentagon Renovation Program Manager reports directly to the Deputy Secretary.

Like any major project, the Pentagon Renovation involves multiple, often competing interests. The project has a variety of organizations each with an important stake in the outcome of the renovation. Beyond the traditional owner-contractor interests, the project owner (the Department of Defense) is itself a huge amalgam of organizational components and interests. The oversight of the entire Legislative and Executive Branches of Government is constant as cost and defense interests are continually rebalanced. In addition, there are regional energy, transportation, historical and planning groups and their considerations that must be incorporated into the renovation process.

A major challenge for the Renovation Program is the coordination of all of the projects and processes described in this report, each with its own vitally important issues, in an on-going construction environment. The success of the Program requires an innovative management approach to accommodate the many interrelated and simultaneous construction efforts .

The use of Integrated Product Teams (IPTs) to manage manufacturing, research, and major systems acquisition programs has had a significant history, but such teams had not been adopted previously for a complex construction project. The IPT brings together representatives from all the parties with significant interests in a particular activity.

It is often important to enlist construction contractors, or others traditionally considered adversarial to the traditional owner, as members of an IPT. Team members are encouraged to share information with the

group. They are all assumed to share the same goal of providing the best value and best quality product available. Innovative contracting incentives, such as the award fee process and underrun cost sharing, ensure that contractors also have an important interest in finding the most effective solution to problems.

The IPT meeting is a critical component in the Renovation Program's business plan. In stark contrast to the traditional construction contract progress meeting, IPT meetings promote vigorous interaction and the best ideas normally gain a consensus, regardless of the proponent's sponsor.

There are several management teams on the Pentagon Renovation Project. Representatives of the basic Government team including the Washington Headquarters Services, the U. S. Army Communication-Electronic Command, and specialized Government contractor employees form the core of most IPTs. The IPTs are managed in groups and group leaders report to the Renovation Program Manager who, in turn, reports to the Deputy Secretary of Defense on all matters relating to the program.

Representatives from user organizations, private contractors, or other entities are often added to particular teams to reflect important interests in an activity. Legal, engineering, telecommunications, tenant activities, contracting, and other key interests must be accommodated. An aim of the IPT approach is to keep everyone informed while also obtaining the benefit of their ideas at the earliest possible point. Changes can be agreed upon, implemented, and adhered to more easily when all interested parties have meaningful input throughout the process.

Team members become part of either functional or geographic IPTs.

The functional IPTs are responsible for the processes involved in executing a specific project, such as planning, design and contracting, among many others. Their goals include providing process management and planning expertise to the geographic teams.

The role of a geographic IPT leader is similar to that of the traditional "project manager" in terms of overseeing a project from its inception through to completion. The geographic teams "own" schedule and budget, which means that they are responsible for the day-to-day execution of project activities, ensuring that costs and schedules are maintained. Other IPTs may be established to deal with the facets of a particular contract or set of contracts.

In addition to the IPTs discussed above, special short-term teams, called project or process action teams, are formed to deal with temporary problems. As always, the early involvement of various interest groups provides the best opportunity to reach a mutually acceptable solution or to define the full range of issues.

A renovation team member describes a technical facility to senior Pentagon officials.